

NEW HAMPSHIRE

Healthy Homes & Lead Poisoning Prevention Program

2013 Lead Poisoning Surveillance Report

Department of Health and Human Services

Division of Public Health Services

Bureau of Public Health Protection

Healthy Homes & Lead Poisoning Prevention Program

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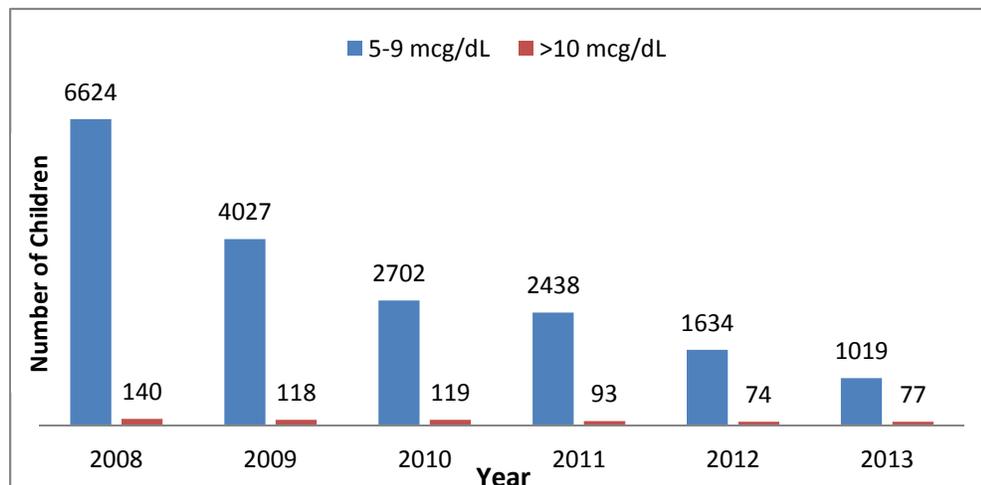
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Children Poisoned by Lead in New Hampshire

There is no safe level of lead in the blood and the damage from lead poisoning is permanent. Children are more at risk for lead poisoning because their smaller bodies are in a continuous state of growth and development. Lead is absorbed at a faster rate compared to adults, which causes more physical harm in children than in adults¹. Furthermore, children, especially as they are learning to crawl and walk, are constantly on the floor and therefore more prone to ingesting and inhaling dust potentially contaminated with lead. While no detectable blood lead level is considered safe, the Centers for Disease Control and Prevention's (CDC) Advisory Committee on Childhood Lead Poisoning Prevention (ACCLPP) has recently advised that an elevated blood lead level (EBLL) of 5 micrograms per deciliter (mcg/dl) be used as the reference level to identify children with an EBLL that should trigger additional action, including lead education, environmental monitoring, and additional medical monitoring (reference ACCLPP document)¹. In 2013, the Healthy Homes & Lead Poisoning Prevention Program (HHLPPP) documented 1,096 children with an elevated lead level above 5 mcg/dl. This number represents those children tested using capillary and venous testing methods.

1,096 New Hampshire children under the age of six were poisoned by lead ≥ 5 mcg/dl in 2013.

Of the 1,096 New Hampshire children with a documented EBLL, 77 of these children had an EBLL that was higher than 10 mcg/dl, the level at which an environmental investigation and nurse case management services are provided by the HHLPPP. **Chart 1** provides a historical overview of children with EBLLs from 2008 to 2013. The HHLPPP will explore data in **Chart 1** to obtain a better understanding of what could potentially be contributing to this declining trend. Factors such as a screening rate decline in children could potentially be contributing to this trend. **Chart 1 – Children 0-71 Mos. in Age with a Blood Lead Level ≥ 5 mcg/dL in 2008-13**



Statewide Blood Lead Surveillance

The HHLPPP maintains an extensive blood lead surveillance system for the purpose of monitoring trends in blood lead levels in adults and children throughout New Hampshire. The data helps identify populations at risk for EBLL, to determine whether screening guidelines are being followed in high-risk populations, and to ensure that appropriate environmental and medical follow-up is being provided to children with EBLL. Under Title X Public Health, RSA 130-A *Lead Paint Poisoning Prevention and Control*, all licensed laboratories, including those locations using automatic Lead Care II Analyzers are obligated to report blood lead data for all New Hampshire residents to the HHLPPP. An estimated 100 licensed laboratories that serve approximately 1,500 medical clinics, hospitals, and employer groups report blood lead data to the HHLPPP.

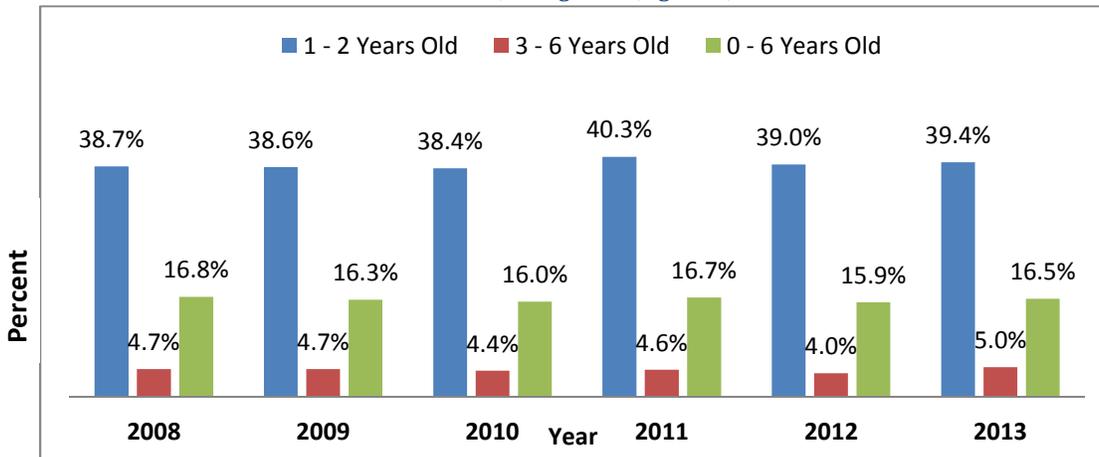
Blood Lead Testing Rates for Children

According to the 2010 U.S. Census, there are 84,767 children under the age of six residing in the State of New Hampshire. Of these children, 27,480 are one and two year olds, our most vulnerable age for lead poisoning. According to the *New*

61% of the children who were at highest risk of lead poisoning **did not** receive the recommended test for lead.

*Hampshire Childhood Lead Poisoning Screening and Management Guidelines*ⁱⁱ, HHLPPP estimates that 23,554 New Hampshire children ages 1 and 2 *should* have been tested for lead poisoning in 2013. Unfortunately, only 10,830 were tested, meaning 61% of the children who were at the highest risk of being exposed to lead did *not* receive the recommended test for lead. **Chart 1** illustrates the historical overview of childhood lead testing for children 0-6 years of age in 2013.

Chart 1 – Percent of NH Children tested for lead, both genders, ages 0-6, 2008 - 2013



According to the same 2010 U.S. Census, 44,293 children aged 3 through 6 years reside in New Hampshire. Of these children, a total of 2,198 were tested for EBLL in 2013. This represents 5% of the 3-6 year olds in the state. It is difficult to determine the exact number of children in this age range that should be tested for lead. Children that test negative for EBLL at age two and do not exhibit any risk factors (i.e. moving to new home, new child care, having a close relative in a pre-1978 home, or undergoing a current renovation project in a pre-78' home) do not require additional testing. The HHLPPP program does currently not have the surveillance capacity to determine the number of children 3 – 6 years old that require follow-up blood lead testing.

Universal versus Target Communities

Several factors influence the rate of lead poisoning in a community. In accordance with recommendations from the Centers for Disease Control and Prevention, cities and towns with 27% or more pre-1950 housing stock are considered high risk communities. Some communities are determined to be at even higher risk for lead poisoning due to additional factors. These factors include the percentage of the population under the age of six; the percentage under the age of six living in poverty; the percentage of children under the age of six enrolled in Medicaid or other federal assistance programs; and special populations living in the communities. Through a review of these factors for all 234 New Hampshire communities, the HHLPPP has designated each community as either a “Universal” or a “Target” community according to the Department of Health and Human Services, *New Hampshire Childhood Lead Screening and Management Guidelines*.

57% of New Hampshire's 234 communities require Universal screening of all children under six years of age

In the high-risk “Universal” communities, the HHLPPP recommends that all children be tested at one year of age and again at two years of age. Older children from three up to six years of age, who have not previously been tested, have moved to a new home, new child care, having a close relative in a pre-1978 home, or undergoing a current renovation project in a pre-78' home or who exhibit additional risk factors should also be tested

Those children under six living in “Target” communities are screened by their physician using a questionnaire to assess their risk for lead poisoning. A positive or uncertain response to any of the five questions prompts the physician to test the child for lead.

Additionally, all children enrolled in Medicaid or Head Start, regardless of town of residence, are required to be tested at both one and two years old; older children aged three to six years old not

previously tested should also be tested. It is recommended that children enrolled in WIC be tested for lead poisoning. The ACCLPP and HHLPPP also recommend that any refugee, immigrant, or internationally adopted child should be tested, and that neonates and infants born to mothers exposed to lead or with a high blood lead level during pregnancy or lactation should be tested (reference HHLPPP and ACCLPP)

In Universal or Target communities, testing a child for lead can be completed by a capillary finger stick or a venous blood draw. This testing can be done in a physician’s office, laboratory, WIC clinic, healthcare center or a wellness fair. Any child having an EBLL that is 5 mcg/dl or higher from a capillary finger stick should have their EBLL confirmed with a venous draw blood test.

New Hampshire’s Eight Highest Risk Communities

Through a review of surveillance data, the HHLPPP has identified eight communities where children are especially vulnerable to the dangers of lead poisoning. Risk factors reviewed are outlined in **Table 1** and include the percentage of homes built prior to 1978, percentage living in poverty, percentage of children under the age of six enrolled in Medicaid, percentage under six living in poverty, special populations living in the community and history of EBLL.

Table 1 - New Hampshire’s Eight Highest Risk Communities

US Census & 2008-2012 American Community Survey

Town/City	Refugee Resettlement Area	% of pre-78’ homes	% Living in Poverty	% under 6 yo. living in Poverty	% 0-5 yo. enrolled in Medicaid	# of EBLL ≥10mcg/dL 2009-2013
Berlin	No	91.7%	15.6%	15.8%	81%	6
Claremont	No	84.1%	14.9%	25.5%	77%	11
Franklin	No	65.4%	19.7%	26.7%	78%	9
Laconia	Yes	74.1%	13.2%	21.6%	85%	15
Manchester	Yes	74.4%	14.1%	28.0%	72%	151
Nashua	Yes	65.9%	9.3%	14.5%	49%	32
Newport	No	70.5%	14.9%	7.5%	70%	5
Rochester	No	55.1%	12.3%	39.8	61%	22

The communities identified at highest risk are Berlin, Claremont, Newport, Franklin, Laconia, Manchester, Nashua, and Rochester. The Cities of Manchester, Nashua, and Laconia are the home of special refugee populations in addition to other risk factors. Concord also has special populations, though does exhibit other risk factors making it a “highest risk” community. The City of Berlin has the largest percent of old homes with 91.7% of homes built prior to 1978. Franklin is especially

vulnerable with 19.7% of the population living in poverty and 26.7% of children under 6 years old living in poverty. Manchester follows closely with 28% of children under the age of 6 living in poverty. Laconia and Berlin have the largest percent, 85% and 81% respectively, of 0-5 year olds enrolled in Medicaid.

Cost of Preventive Testing

The HHLPPP recommends all children in high risk communities or with other risk factors be tested for blood lead before the age of six. Children receiving Medicaid or WIC benefits are required to have blood lead tests at one and two years of age. The cost of a single blood lead screening averages \$38 (in 2013 dollars), including the test and the venous blood draw^v. Applied to 24,000 children ages 1 and 2 that should be tested, the cost of preventive screening in New Hampshire was \$912,000. Blood lead tests are covered by Medicaid and most private health insurance.

Table 2 represents childhood blood lead testing data for children 0-71 months in age for New Hampshire's eight highest risk communities; Berlin, Franklin, Laconia, Newport, Claremont,

The cost of preventive lead testing of New Hampshire's 24,000 highest risk children ages 1 and 2 was \$912,000.

Rochester, Manchester, and Nashua. Over the past 3 years in the 12-23 month age group, New Hampshire as a whole screened 53.2% in 2011, 52.6% in 2012, and 53.2% in 2013. For 2013, the City of Berlin had the highest screening rate for this age group, followed by the Cities of Franklin and Manchester.

Over the past 3 years in the 25-35 month age group, the state as a whole screened 27.8% in 2011, 25.7% in 2012, and 26% in 2013. For 2013, the City of Berlin, again, had the highest screening rate for this age group, followed by the Cities of Manchester and Newport. Claremont and Laconia have the lowest screening rates for all ages. As a whole, these highest risk communities have had level screening rates over the last 3 years, not significantly increasing or decreasing. Using surveillance data the HHLPPP targets educational resources towards these communities in an effort to increase knowledge among parents, property owners, contractors and the medical community.

Please note in **Table 2**, that the 104% screening rate in Berlin for the 12-23 month old age group is based on the denominator of 75 children in that age group in Berlin based on the 2010 U.S. Census. A screen is defined as any test in the 2013 calendar year where the child has never had a confirmed elevation and only includes one test per child for time frame because child is only included in denominator (population) once. Please note that the numerator for the age-based screening rate is calculated based on the date of testing.

Table 2 – 2013 Lead Testing in New Hampshire’s Highest Risk Communities

Town	Age Group	Number Screened	# Venous Confirmed elevations	5-9 Venous and Capillary Tests	10-14 Venous Test Only	15-19 Venous Test Only	20+ Venous Test Only	US Census 2010 Pop***	Screening rate	% Elevations/ screens
Berlin	0-11 mos	8	0	3	0	0	0	87	9.2%	0.0%
	12-23 mos	78	2	25	1	1	0	75	104.0%	2.6%
	24-35 mos	88	1	22	1	0	0	102	86.3%	1.1%
	36-71 mos	29	0	12	0	0	0	284	10.2%	0.0%
	Total	203	3	62	2	1	0	548	37.0%	1.5%
Claremont	0-11 mos	8	0	4	0	0	0	128	6.3%	0.0%
	12-23 mos	78	0	2	0	0	0	172	45.3%	0.0%
	24-35 mos	27	0	1	0	0	0	177	15.3%	0.0%
	36-71 mos	50	0	4	0	0	0	526	9.5%	0.0%
	Total	163	0	11	0	0	0	1003	16.3%	0.0%
Newport	0-11 mos	0	0	0	0	0	0	74	0.0%	0.0%
	12-23 mos	50	1	2	0	1	0	92	54.3%	2.0%
	24-35 mos	34	0	7	0	0	0	77	44.2%	0.0%
	36-71 mos	16	0	1	0	0	0	214	7.5%	0.0%
	Total	100	1	10	0	1	0	457	21.9%	1.0%
Franklin	0-11 mos	7	0	1	0	0	0	99	7.1%	0.0%
	12-23 mos	78	0	16	0	0	0	96	81.3%	0.0%
	24-35 mos	24	0	5	0	0	0	95	25.3%	0.0%
	36-71 mos	30	0	8	0	0	0	318	9.4%	0.0%
	Total	139	0	30	0	0	0	608	22.9%	0.0%
Laconia	0-11 mos	6	0	1	0	0	0	178	3.4%	0.0%
	12-23 mos	87	1	6	1	1	0	178	48.9%	1.1%
	24-35 mos	45	0	4	0	1	0	174	25.9%	0.0%
	36-71 mos	41	0	1	0	1	0	506	8.1%	0.0%
	Total	179	4	12	1	3	0	1036	17.3%	2.2%
Manchester	0-11 mos	160	0	1	0	0	0	1525	10.5%	0.0%
	12-23 mos	1065	10	66	8	0	2	1512	70.4%	0.9%
	24-35 mos	676	2	62	1	0	1	1498	45.1%	0.3%
	36-71 mos	385	3	85	1	1	1	4165	9.2%	0.8%
	Total	2286	15	214	10	1	4	8700	26.3%	0.7%
Nashua	0-11 mos	56	0	1	0	0	0	1076	5.2%	0.0%
	12-23 mos	689	7	49	5	1	1	1088	63.3%	1.0%
	24-35 mos	308	0	27	0	0	0	1078	28.6%	0.0%
	36-71 mos	159	2	17	1	1	0	3274	4.9%	1.3%
	Total	1212	9	94	6	2	1	6516	18.6%	0.7%
Rochester	0-11 mos	17	0	3	0	0	0	333	5.1%	0.0%
	12-23 mos	236	3	22	3	0	0	384	61.5%	1.3%
	24-35 mos	136	2	16	2	0	0	380	35.8%	1.5%
	36-71 mos	74	1	12	0	1	0	1043	7.1%	1.4%
	Total	463	6	57	5	1	0	2140	21.6%	1.3%
All Other Towns	0-11 mos	722	4	34	4	0	0	9492	7.6%	0.6%
	12-23 mos	4838	22	258	19	2	1	9923	48.8%	0.5%
	24-35 mos	2293	10	141	7	1	2	10378	22.1%	0.4%
	36-71 mos	1414	3	96	2	1	0	33963	4.2%	0.2%
	Total	9267	39	529	32	4	3	63756	14.5%	0.4%
NH Total	0-11 mos	984	4	48	4	0	0	12994	7.6%	0.4%
	12-23 mos	7199	47	446	37	6	4	13521	53.2%	0.7%
	24-35 mos	3631	16	285	11	2	3	13959	26.0%	0.4%
	36-71 mos	2198	10	240	4	5	1	44293	5.0%	0.5%
	Total	14012	77	1019	56	13	8	84767	16.5%	0.5%

*U.S. Census 2010, Summary File 1, Table PCT12, Sex by Age

Elevated Blood Lead in Adults

Most adults are exposed to lead through their employment or hobbies. The U.S. Occupational Safety & Health Administration (OSHA) blood lead regulations mandate that employers with workers who are exposed to lead must provide medical monitoring to their employees who, on any given day, are exposed to airborne lead above the "action level" of 30 mcg/m³ (micrograms per cubic meter of air).

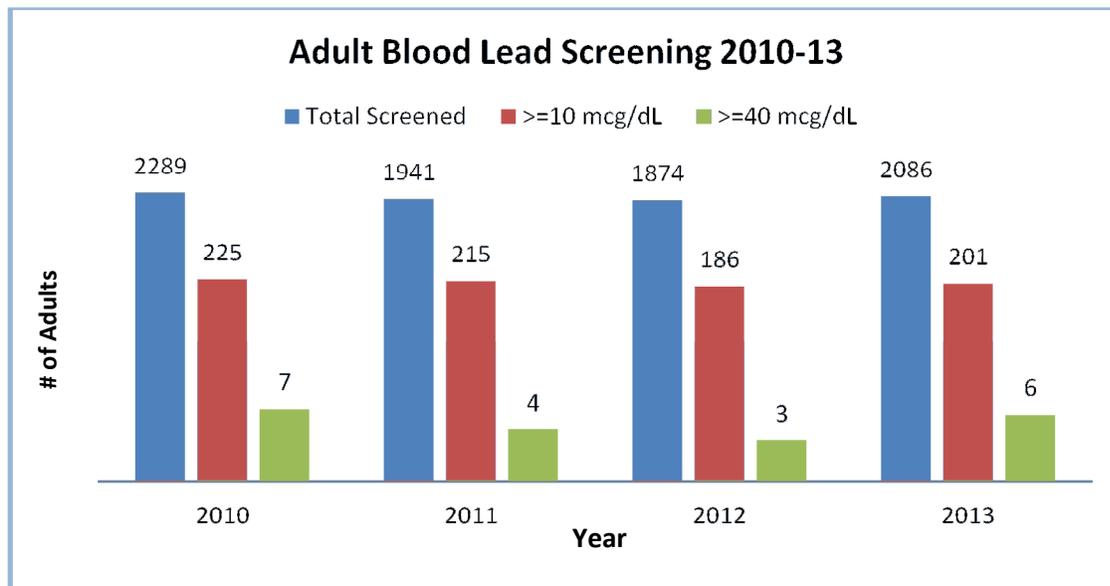
Under the current OSHA standard, if an employee tests above 40 mcg/dL, he or she must be removed from the work area. Whenever the results of a blood lead test indicate that an employee's blood lead level exceeds the acceptable OSHA standard, the employer must provide a follow-up blood test within two weeks after the first test. If an employee is removed from work because of an exposure leading to an EBLL the employee must have a repeat blood lead test again after one month and then every two months until two consecutive blood tests indicate a blood lead level below 40 mcg/dL.

201 New Hampshire adults were poisoned by lead ≥ 5 mcg/dl in 2013. Of these, 6 adults were above OSHA's "Action Level" of 40 mcg/dl.

The National Institute of Occupational, Safety, and Health Administration (NIOSH) has designated 10 mcg/dL of whole blood as the reference blood lead level for adults. In 2009, the Adult Blood Lead Epidemiology and Surveillance (ABLES) program updated its case definition for an EBLL to ≥ 10 mcg/dL. The U.S. Department of Health and Human Services recommends that EBLs among all adults be reduced to < 10 mcg/dL. OSHA Lead Standards require workers to be removed from lead exposure when BLLs are equal or greater than 50 mcg/dL (construction industry) or 60 mcg/dL (general industry) and allow workers to return to work when the EBLL is below 40 mcg/dL. OSHA Lead Standards also give the examining physician broad flexibility to tailor special protective procedures to the needs of individual employees. Therefore, the most current guidelines for management of lead-exposed adults should be implemented by the medical community at the current CDC/NIOSH reference BLL of 10 mcg/dL.

Chart 3 shows that in 2013, 2,086 adults in New Hampshire were tested for EBLL resulting in 201 with EBLL over 10 mcg/dL, the level at which CDC/NIOSH recommends all adults be below. A total of 6 adults statewide tested above the OSHA standard of 40 mcg/dL.

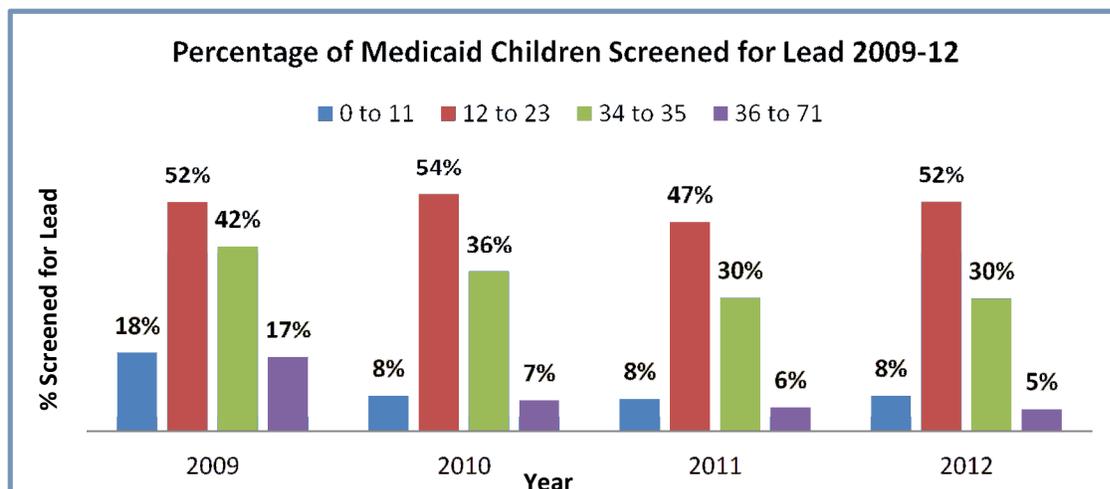
Chart 3 - Historical Overview of Adult EBLL



Medicaid Population

In 2012, children receiving Medicaid benefits represented 82% of all newly poisoned children ≥ 10 mcg/dL. In 2012, 52% of Medicaid enrolled children one year of age, and 30% of children two years of age were tested for lead poisoning. Only 18% of all children under six years of age receiving Medicaid benefits were tested for lead. The CDC’s goal for testing Medicaid eligible children ages 0-6 for lead poisoning is 85%. **Chart 4** shows historical testing data for Medicaid enrolled children years 2009 to 2012. Medicaid data is not yet available for 2013.

Chart 4 - Historical Overview of Medicaid Blood Lead Testing



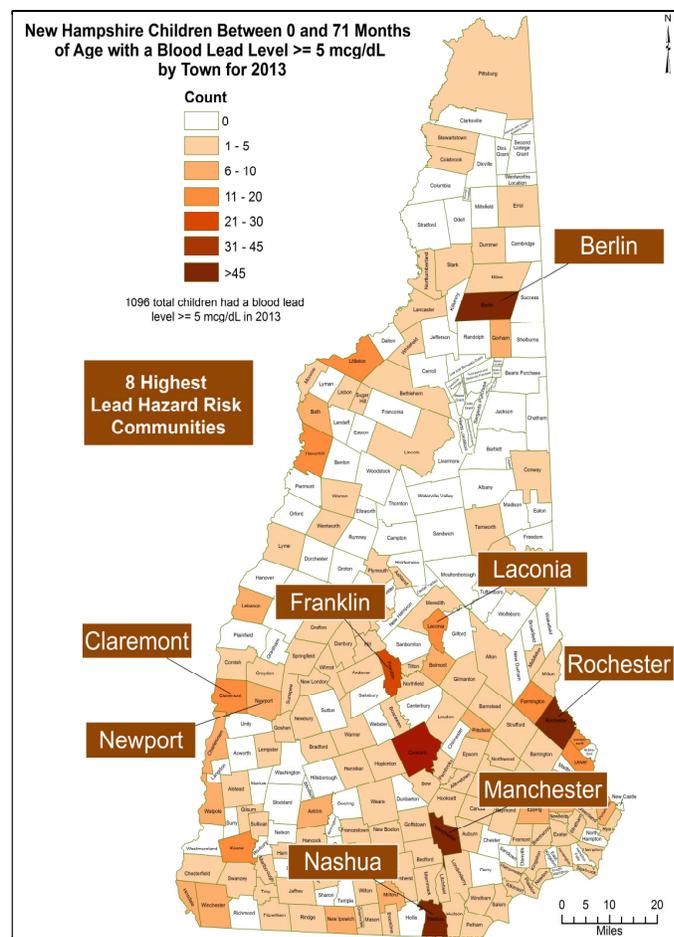
Educating Children with Elevated Blood Lead

Children with EBLL may be in need of special education because of their slower development, lower educational success, and related behavioral problemsⁱⁱⁱ. Moreover, environmental lead exposure in children has been confirmed as a risk factor for attention deficit hyperactivity disorder (ADHD)^{iv}.

When children have an EBLL of 2 mcg/dL or greater, the risk of ADHD is four times higher than that for children with EBLs at or below 1mcg/dL^v. The U.S. Environmental Protection Agency estimates

that 20% of children with EBLs greater than 10 mcg/dL should get special education; therefore, 15 of the 77 New Hampshire children with EBLs at 10 mcg/dL or over should receive special education. Applied to the estimated New Hampshire average special education tuition cost per student for fiscal year 2013 which was \$13,587^{vi}, it is projected that the total annual costs of lead related special education were roughly at \$209,000 annually for those children with EBLL greater than 10 mcg/dl. It does not take into account those children with EBLL >5 mcg/dl. This is consistent with the New Hampshire Division of Public Health Services *Economic Burden of Environmentally Attributable Illness in Children in New Hampshire* report^{vii} which projected the costs of lead-related special education at \$209,000 annually.

Map 1 – Children 0-6 years with EBLL \geq 5mcg/dl by town



During the 2013 school year, 74,413 or 33% of all New Hampshire school age children (5 – 18 years of age) had EBLL >5mcg/dl at some point in their lives and are at risk for neurological impairment.

This represents surveillance data from 1995 to 2013 collected by capillary or venous blood draw methods.

Map 1 illustrates New Hampshire children between 0-6 years old with a blood lead level ≥ 5 mcg/dl by town in 2013. Private and public schools across the state in addition to families that home school will need to be prepared to educate these children. School districts receiving children from Nashua, Manchester, Concord, Franklin, Laconia, Rochester, Dover, Somersworth, Littleton, Haverhill, and Keene have been impacted the most.

During the 2013 school year, 33% of all New Hampshire school age children (5 – 18 years of age) had EBLL >5 mcg/dl at some point in their lives and are at risk for neurological impairment.

Removing Lead Hazards from our Housing

Through private monies and funding from the U.S. Housing and Urban Development (HUD) to the cities of Nashua and Manchester and statewide through the New Hampshire Housing Finance Authority's Lead-Based Paint Hazard Control Program, approximately 1,200 units in New Hampshire have been made lead-safe. According to the 2010 U.S. Census, there are over 300,000 units statewide that still contain lead hazards. An estimated 18,000 of these units house young children under six in Universal communities, of which 2,478 homes house low income families with children six and under.^{vii} Based on research conducted by Gould in 2009ⁱⁱⁱ, the cost of lead abatement was in the range of \$1,387 to \$12,450 per housing unit (in 2013 dollars). To perform lead abatement in these targeted 2,478 homes, the estimated cost would be between \$3.8 and \$34.3 million.

The HHLPPP focuses EPA grant funding on building capacity and licensing lead professionals in the private sector statewide necessary to remove lead hazards. In 2013 the private sector included 5 Lead Inspectors/Risk Assessors, 45 Lead Abatement Contractors, 4 Trainers, 16 Supervisors, and 22 Lead workers. All private sector lead professionals are licensed by the HHLPPP.

Economic Costs Associated With EBLL

The Division of Public Health, Environmental Public Health Tracking Program recently published the *Economic Burden of Environmentally Attributable Illness in Children of New Hampshire*^{vii} report that provides an overview of the costs associated with lead poisoning. According to this economic burden report, children exposed to high levels of lead can suffer from damage to the nervous system, brain, and kidneys; behavior and learning problems; reduced growth; and even death. Even lower ranges of EBLL (2-10 mcg/dL) are known to be a risk factor for

Economic costs associated with EBLL include medical treatment, special education, increased crime, and loss future earnings

impaired cognitive and behavioral outcomes in children. Over a lifetime, the damage and declines in IQ have substantial economic and social impacts. Therefore, there is *no* safe level of lead exposure for children; all children should be lead free. Reducing lead exposure yields economic benefits by avoiding health care and special education costs and by preventing reductions in intelligence, academic achievement, future productivity, and violent criminal behavior.

Estimated cost of Medical treatment Associated With EBLL

In 2012, the CDC advised that an EBLL of 5 micrograms per deciliter (mcg/dl) be used as the reference level to identify children with an elevated BLL that should trigger additional action. The main intervention for an EBLL is to stop the exposure by removing environmental or dietary sources of lead. Actions for low EBLs (5-19 mcg/dL) involve follow-up monitoring and lead education for diet and environment. At higher lead levels (20-44 mcg/dL) children require further diagnostic lead testing, complete physical exams, neurodevelopment monitoring, and/or abdominal X-ray. Children with EBLs 40 mcg/dL or above may need to be hospitalized and/or undergo chelation therapy according to HHLPPP guidelines ⁱⁱ. The *Economic Burden of Environmentally Attributable Illness in Children of New Hampshire* report applied Gould’s study from 2009ⁱⁱⁱ and extended recommendation action to the new EBLL. The annual health treatment costs in New Hampshire were estimated at approximately \$115,847 as shown in **Table 8**^{vii}.

Table 8 - Estimated Annual Cost of Lead-related Medical Treatment in New Hampshire

Elevated Blood Lead Level mcg/dL	Estimated cost of medical action (in 2013\$)	Number of children with EBLL (2013)	Estimated annual health cost (in 2013\$)
5-14	\$95.	1,076	\$102,220
15-19	\$95.	13	\$1,235
≥20	\$1,549.	8	\$12,392
Estimated Total of Medical Treatment \$115,847			

Estimated Cost of Crime Related to Lead Exposure

There is a strong relationship between lead exposure during early childhood and future criminal activity, especially violent crime^{viii ix x}. Research has shown that childhood lead exposure affects the risk of criminal behavior later in life. Crimes included murder, rape, aggravated assault, robbery, and burglary. The *Economic Burden of Childhood Illness in New Hampshire* report ^{vii} has shown that

even a 1 mcg/dL reduction in the average preschool blood lead level may result in an estimated 889 fewer burglaries, 2 fewer robberies, 78 fewer aggravated assaults, 17 fewer rapes, and 1 fewer murders. The total direct cost of lead-linked crimes was estimated at \$9 million, including direct victim costs, costs related to the criminal justice system, and productivity losses associated with perpetrators of crimes. For the purposes of this conservative analysis, only the direct costs of each crime were considered.

Lead-related crimes cost New Hampshire an estimated \$9 million in 2013.

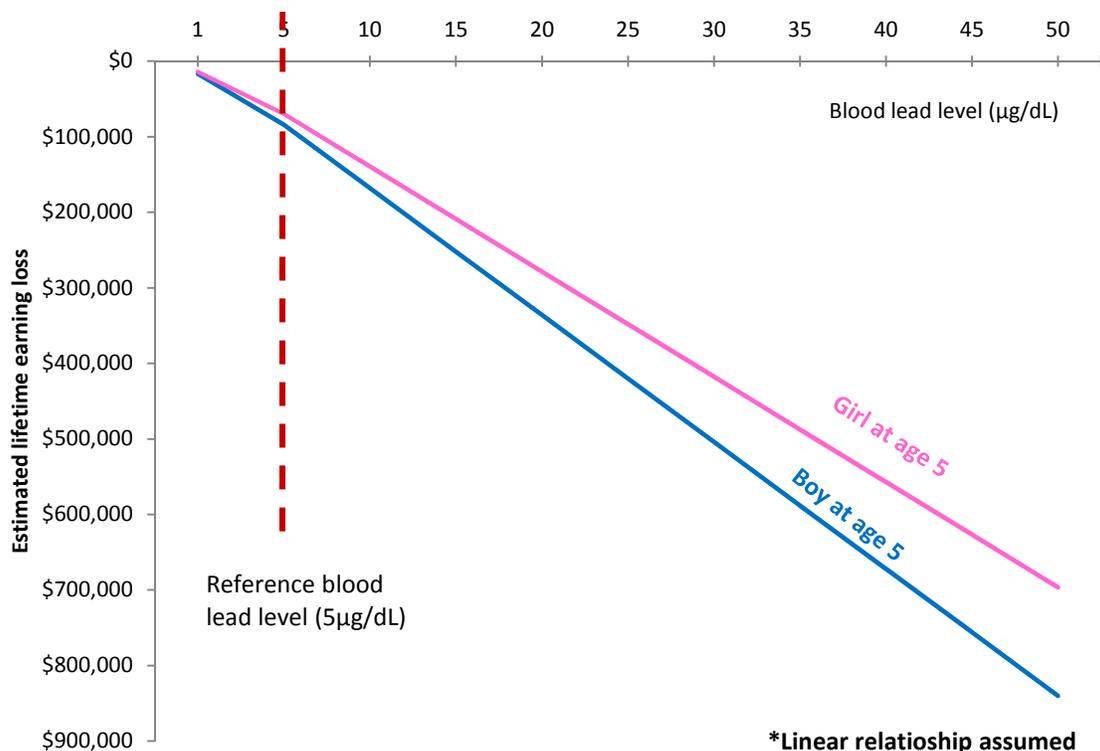
Potential Lifetime Earning Loss Related to Lead Exposure

According to the *Economic Burden of Childhood Illness in New Hampshire* report a 1mcg/dl exposure to lead relates to a 0.57 decline in IQ points at 5 years of age with ranges from 0.2 to 0.93 IQ points.

... potential lifetime earning loss related to lead exposure in New Hampshire is estimated at \$241 million.

Applying a linear assumption between blood lead level increase and IQ point decrease, the report estimated lost lifetime earnings by blood lead level as illustrated in **Chart 4**. For example, a 5-year-old boy with a blood lead level at 50 mcg/dL may lose more than \$0.8

Chart 4 - Estimated Lifetime Earning Loss by Blood Lead Levels



million of his lifetime earnings. Total cost estimates for the economic impact of childhood lead

exposure in New Hampshire were calculated. The present value of New Hampshire's economic losses attributable to lead exposure in the 2013 cohort of 5-year olds was estimated at \$240.4 million with a range from \$84.3 to \$392.3 million.

Summary of the Impact of the Environment on Lead Exposure

According to the *Economic Burden of Childhood Illness in New Hampshire* report, with an average EBLL of 1.17 mcg/dL, children in the 2013 cohort of 5-year-olds would lose \$240.4 million potential earnings due to lead exposure. These costs should be interpreted as the lost value of future wage earnings that accrue over a lifetime. Therefore, they are not representative of direct annual expenditures, but are instead indicative of lost potential in the current cohort of 5-year-old children in New Hampshire.

Additionally, minimizing children's lead exposure may save \$0.12 million in health treatment costs, as well as \$0.2 million in special education due to lead poisoning. Moreover, to reduce childhood blood lead levels by 1 mcg/dL, the *Economic Burden of Environmentally Attributable Illness in Children of New Hampshire* report has shown that it may decrease 987 crimes and save \$9 million in related costs ^{vii}.

The total cost associated with elevated blood lead in New Hampshire for 2013 is estimated to be \$249 million.

The Healthy Home & Lead Poisoning Prevention Program

With the 2009 state budget cuts followed by the loss of funding from the Centers for Disease Control and Prevention in 2012, the HHLPPP has never fully recovered staffing levels of 2008. Down from eleven full time employees (2008), the HHLPPP has blended resources from the U.S. Environmental Protection Agency, Medicaid, and state general funds to maintain 5.3 full time equivalents responsible for outreach, education, nurse case management, paralegal services, lead investigations, surveillance, licensing, and compliance activities statewide.

With this reduced staffing, HHLPPP has enforced RSA 130-A, *Lead Paint Poisoning Prevention and Control*, www.gencourt.state.nh.us/rsa/html/NHTOC/NHTOC-X-130-A.htm. This statute provides the HHLPPP with the authority to inspect rental dwelling units and licensed child care facilities for the presence of lead exposure hazards when a child less than six years of age has a venous blood lead level of 10 micrograms per deciliter (≥ 10 mcg/dL) or higher. At this blood lead level, comprehensive case management is provided along with an investigation into the source of poisoning.

In 2013, under the authority of RSA 130-A, the HHLPPP provided nurse case management to 77 children and investigated the poisoning of 49 children. A total of 40 Administrative Orders of Lead Hazard Reduction were issued to owners of rental properties and 9 Letters of Recommendation were provided to families owning their own homes. In addition, 1 Day Care Center was issued an Administrative Order of Lead Hazard Reduction.

Additional Information

This report is an overview of the 2013 program activities and blood lead surveillance data for the State of New Hampshire, Department of Health and Human Services, Division of Public Health Services, Healthy Homes and Lead Poisoning Prevention Program (HHLPPP). Please contact the program at 1-(800) 897-LEAD (5323) for further information regarding this report.

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